

# Spontaneous pneumomediastinum: A rare complication of anorexia nervosa

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Spontaneous pneumomediastinum (PM) usually results from alveolar wall rupture and must be distinguished from posttraumatic PM resulting from traumatic events (chest trauma, endobronchial or esophageal procedures with wall laceration, mechanical ventilation, or other invasive procedures).

Spontaneous PM is a rare entity in anorexia nervosa (AN); approximately 20 cases have been described in the literature. Vomiting (a common symptom in AN) is often the cause of PM in patients with AN.

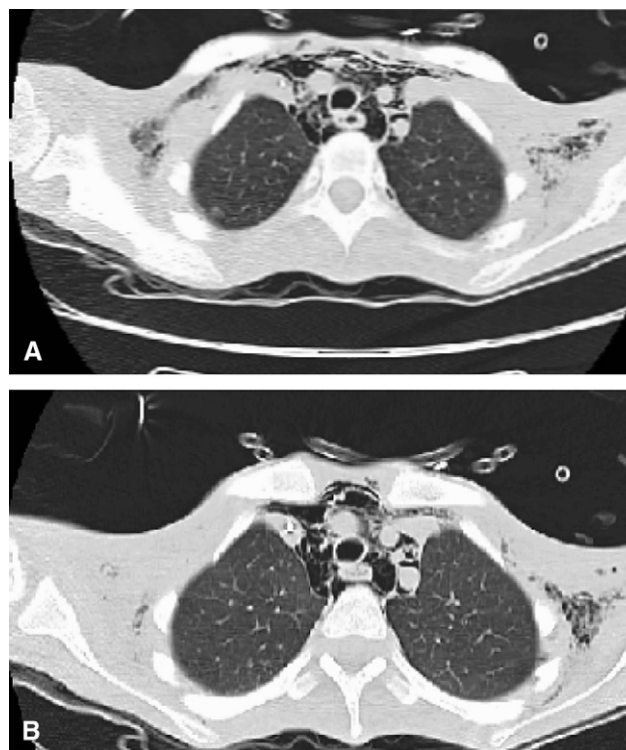
We describe the case of spontaneous PM in a young anorexic woman in whom vomiting was not the cause of the PM.

## CLINICAL SUMMARY

An 18-year-old nonsmoking anorexic woman with extreme malnutrition necessitating refeeding was referred to us because of subcutaneous air in the neck and thorax. Her height was 179 cm and weight 34 kg.

She had anxiety while feeling an unusual crackling sensation in her neck and thorax, which rapidly developed when she was at home 1 day before her hospital admission; she had no dyspnea. No episodes of trauma, injury, vomiting, or coughing in the preceding days were reported by the patient or her parents, and no family history of emphysema, respiratory distress, or pneumothorax were evident.

Chest radiograph revealed subcutaneous emphysema in the neck and thorax; thoracic computed tomographic scan showed pneumomediastinum, without pneumothorax, extending from the neck to the diaphragm (Figure 1, A and B). An esophageal gastric passage radiograph showed no abnormalities, and no signs of esophageal perforation were evident. Laryngopharyngoscopic findings were within normal



**FIGURE 1.** A and B, Thoracic computed tomographic scans of the patient. Diffuse subcutaneous emphysema, from the neck to the thorax, and pneumomediastinum are evident.

limits, too, without signs of mucosal lesions or submucosal swelling.

No surgical procedures were done: her condition was monitored by radiologic surveillance only. The PM disappeared within 2 weeks, and the patient was referred to an eating disorder clinic to manage the AN.

## DISCUSSION

Spontaneous PM is an uncommon and generally benign entity developing in the absence of traumatic or iatrogenic events. Usually, respiratory maneuvers with high intrathoracic pressures (Valsalva maneuver, coughing, energetic crying, or vomiting) have been implicated in its development. The intra-alveolar pressure increase causes alveolar rupture and the escape of air into the mediastinal space. Spontaneous PM rarely requires surgical drainage inasmuch as it usually resolves spontaneously.

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Clinical symptoms are sudden chest pain, dyspnea, and, less commonly, dysphagia and hoarseness. Physically, subcutaneous air and a typical crunching sound are present.

When chest pain and dyspnea are present, anxiety and panic attack are frequent. Panic disorders are often observed in anorexic patients: when chest pain and/or dyspnea or dysphagia appear, spontaneous PM should be considered.<sup>1</sup>

At present, 20 cases of spontaneous PM have been described in the literature.<sup>2-4</sup>

PM in anorexic patients is sometimes produced by self-induced vomiting.<sup>3</sup> Our patient had no history of vomiting, and the thorough diagnostic procedures (thoracic computed tomographic scan, esophageal radiologic evaluation, and laryngopharyngoscopy) showed no signs of esophageal or upper airway laceration.

The pathophysiologic mechanism of PM in our patient can be explained by an alveolar wall rupture, with consequent air leak into the mediastinum. The air was interestingly confined to the mediastinum only: no signs of pneumothorax were evident.

PM is sometimes observed in AN: self-induced vomiting causing an esophageal laceration is frequently the cause of PM in these patients.

Anorexic patients with severe malnutrition are at high risk for PM or pneumothorax.<sup>4</sup>

Animal studies reveal that calorie restriction results in an important loss of alveoli and a fall in gas-exchange tissue and thinner alveolar walls.<sup>5</sup> The organism sacrifices the non-essential structures for gluconeogenesis to provide glucose for the brain and proteins for the muscles. Because the oxygen consumption falls during calorie restriction, some lung tissue is sacrificed. With thinner alveolar walls and the loss of alveoli, malnourished anorexic patients are at risk of alveolar wall rupture.

In conclusion, we can suppose that severe malnutrition, causing weakness of the alveolar wall and thinning of the connective tissue, can explain the occurrence of the PM in our patient.

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# Transcranial Doppler ultrasonography: A reliable method of monitoring pulsatile flow during cardiopulmonary bypass in infants and young children

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With a reported incidence ranging from 2% to 25%, neurologic morbidity remains a leading complication in infants and children undergoing cardiac operations requiring the use of cardiopulmonary bypass (CPB).<sup>1</sup> Maintaining optimal cerebral perfusion and hemodynamics during CPB procedures should be the goal to prevent long-term neurologic complications after pediatric open cardiac operations.

Pulsatile flow during CPB generates significantly more hemodynamic energy levels than does nonpulsatile flow at the same mean arterial pressures and pump flow rates in neonates and infants.<sup>2,3</sup> Extra energy generated by pulsatile flow may maintain better cerebral blood flow.<sup>3</sup> We focused on Gosling's pulsatility index (PI) inasmuch as it is accepted as a reliable measure of pulsatility and available on all